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मानक

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“Step Out From the Old to the New”

IS 8808 (1999): Burners for Oil Pressure Stoves and Oil Pressure Heaters [MED 26: Oil Burning Appliances]



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“Knowledge is such a treasure which cannot be stolen”

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भारतीय मानक
तेल दाब स्टोव और तेल दाब हीटर के लिये बर्नर — विशिष्टि
(दूसरा पुनरीक्षण)

Indian Standard

**BURNERS FOR OIL PRESSURE STOVES AND OIL
PRESSURE HEATERS — SPECIFICATION**

(Second Revision)

ICS 27.060.10; 97.040.20

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Oil Burning Appliances Sectional Committee had been approved by the Heavy Mechanical Engineering Division Council.

The burner is a vital component of an oil pressure stove. In view of large number of manufacturers engaged in making burners only, it has been considered expedient to have a separate standard for burners, which will facilitate the manufacturers to make use of ISI Mark for this component.

This standard was first published in 1978 and then revised in 1986. Since then many suggestions were received for its improvement and as a result, Amendments No. 1, 2 and 3 were issued. This revision of the standard has been brought out to incorporate the Amendments No. 1, 2 and 3 issued to the standard and to take into account the fast changing manufacturing and trade practices followed in the country. This revision of the standard incorporates following changes:

- a) Burners designations aligned with the stove designations as per IS 1342,
- b) Requirements for burners for oil pressure heaters added, and
- c) Requirements for fuel thermal efficiency revised along with the table for vessels.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2:1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

**AMENDMENT NO. 4 JULY 2010
TO
IS 8808 : 1999 BURNERS FOR OIL PRESSURE STOVES
AND OIL PRESSURE HEATERS —
SPECIFICATION**

(Second Revision)

[Page 2, clause 9.1.1 (see also Amendments No. 1 and 2)] — Delete.

(ME 26)

Reprography Unit, BIS, New Delhi, India

AMENDMENT NO. 3 JANUARY 2010
TO
IS 8808 : 1999 BURNERS FOR OIL PRESSURE STOVES AND OIL
PRESSURE HEATERS — SPECIFICATION

(*Second Revision*)

(Page 1, clause 5) — Substitute the following for the existing clause:

5 MATERIALS

The components of the burners shall be made from materials as indicated below against each:

<i>Sl No.</i>	<i>Type of Burner</i>	<i>Component</i>	<i>Ref to Figures</i>	<i>Material</i>	<i>Recommended Specification Ref to IS No.</i>
i)	Roarer type burner	Top portion	1	Leaded brass or Brass suitable for forging or MS sheet	319 6912 1079/513
		Burner ring	1	Brass sheet or MS Sheet	410 1079/513
		Nipple	2	Brass rod	319
ii)	Silencer type burner	Inner and outer cap	3B and 3C	Heat resisting steel or Brass sheet of 0.90 ± 0.05 mm thick or Mild steel	1570 (Part 5) 410 1079/513
		Burner fuel feed pipe	1 and 3A	Seamless brass/Copper tubes Copper brazed steel tube	407/2501/8119
iii)	Tube type burner	Burner tube	4	Nickel silver sheet	2283
	Burner head		6	a) Top portion brass sheet 1.60 \pm 0.05 mm thickness b) Lower portion cast brass or wrought brass	410 292 410
		Burner plate	5	Grey cast iron	210
		Silencer cap (outer and inner)	7	Heat resisting sheet or Brass sheet of 0.90 ± 0.05 mm Thick or Mild steel	1570 (Part 5) 410 1079/513
		Wire cloth	4	Brass wire cloth 0.25 \times 0.180 mm	1568

NOTES

1 Minimum copper content for brass items is 60 percent.

2 The Indian Standards referred in col 6 are for guidance only.

(Page 3, Annex A) — Add the following after IS 2283 : 1981:

‘IS 2501 : 1995 Solid drawn copper tubes for general engineering purposes — Specification’.

(Page 3, Annex A) — Add the following after IS 6912 : 1985:

‘IS 8119 : 1976 Copper brazed steel tubing’.

(Page 7, Fig. 1A) — Add the following Notes below Fig. 1A Burner, Roarer Type, Typical:

NOTES

1 Other designs are permissible subject to no change in dimensions *A*, *B* and hexagonal nut.

2 Copper brazed steel tubing as per IS 8119 is also permitted.

AMENDMENT NO. 2 OCTOBER 2005
TO
IS 8808 : 1999 BURNERS FOR OIL
PRESSURE STOVES AND OIL PRESSURE HEATERS —
SPECIFICATION
(Second Revision)

[*Page 2, clause 9.1.1 (see also Amendment No. 1)*] — Substitute the following for the existing:

‘9.1.1 Thermal efficiency when declared in accordance with 12.2.1 may use green label.’

[*Page 3, clause 12.2.1 (see also Amendment No. 1)*] — Substitute the following for the existing:

‘12.2.1 Thermal efficiency may be declared, if it is more than 60 percent for roarer type burner and 62 percent for silencer type burner.’

(*Page 5, Annex C, clause C-2.3, second para*) — Insert the following at the end:

‘(This test may be done in draught free room)’.

(ME 26)

AMENDMENT NO. 1 OCTOBER 2003
TO
IS 8808 : 1999 BURNERS FOR OIL PRESSURE
STOVES AND OIL PRESSURE HEATERS —
SPECIFICATION

(Second Revision)

(Page 2, clause 9.1) — Insert the following new clause after 9.1:

'9.1.1 Thermal efficiency as specified in 13.3 and above, when declared in accordance with 12.2 may use green label.'

(Page 3, clause 12.2) — Insert the following clause at the end:

'12.2.1 Thermal efficiency may be declared, if it is more than 55 percent for roarer and tube type burner and 58 percent for silencer type burner.'

(MED 26)

Indian Standard

BURNERS FOR OIL PRESSURE STOVES AND OIL PRESSURE HEATERS — SPECIFICATION

(Second Revision)

1 SCOPE

This standard specifies dimensions, performance and other general requirements of burners for oil pressure stoves and oil pressure heaters.

2 REFERENCES

The Indian Standards listed in Annex A are necessary adjuncts to this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated in Annex A.

3 TERMINOLOGY

For the purpose of this standard, the nomenclature of different types of burners and their components shall be as indicated in Fig. 1 to 7.

4 TYPES

The burners shall be of the following types commen-

surate with the designation of stoves along with which they are meant for use:

Burner Type	Oil Pressure Stove		Oil Pressure Heaters	
	Stove Designation, New	Burner Designation	Heater Designation	Burner Designation
Roarer type	OOR, OTR, OR, 1R, 1LR, 2R and 3R	0, 1, 2, 3	As per IS 2787 for 1 and Multiburners	1H, 2H, 3H, and 4H
Silencer type	OOS, OTS, 1S, 1LS, 2S, 3S	OS, 1S, 2S, 3S	—	—
Tube type	OTR, OTS	O, OS	—	—

5 MATERIALS

The components of the burners shall be made from materials as indicated below against each:

Sl No.	Type of Burner	Component	Ref to Figures	Material	Recommended Specification, Ref to IS No.
i)	Roarer type burner	Top portion	1	Leadcd brass or Brass suitable for forging	319 6912
		Burner ring	1	Brass sheet	410
		Nipple	2	Brass rod	319
ii)	Silencer type burner	Inner and outer cap	3B and 3C	Heat resisting steel or Brass sheet of 0.90 ± 0.05 mm thick or Mild steel	1570 (Part 5) 410 1079/513
		Burner fuel feed pipe	1 and 3A	Seamless brass and tubes	407
iii)	Tube type burner	Burner tube	4	Nickel silver sheet	2283
		Burner head	6	a) Top portion brass sheet of 1.60 ± 0.05 mm thickness b) Lower portion cast brass or Wrought brass	410 292 410
		Burner plate	5	Grey cast iron	210
		Silencer cap (outer and inner)	7	Heat resisting sheet or Brass sheet of 0.90 ± 0.05 mm thick or Mild steel	1570 (Part 5) 410
		Wire cloth	4	Brass wire cloth 0.25×0.180 mm	1568

NOTES

1 Minimum copper content for brass items is 60 percent.

2 The Indian Standards referred in col 6 are for guidance only.

6 SHAPE, SIZES AND DIMENSIONS

6.1 Figures 1A, 1B and 2 show the common shape, sizes and dimensions of roarer type burner and its important components.

6.2 Figure 3A shows the common shape, sizes and dimensions of silencer type burner and Fig. 3B and 3C show the dimensions of inner cap and outer cap of the silencer type burner.

6.3 Figures 4 to 7 show the common shape and dimensions of tube type burner and its important components.

6.3.1 The brass wire cloth provided in the tube type burner shall be closely rolled to form a cylinder. Length and width of the strip of brass wire cloth shall be 150 mm and 40 mm respectively.

6.4 Maximum permissible reduction in sheet thickness of various components of burners shall be as follows:

<i>Component</i>	<i>Maximum Permissible Reduction in Thickness (mm)</i>
Outer cap for silencer type burner	0.12
Burner head (top portion) for tube type burner	0.15

7 CONSTRUCTION AND ASSEMBLY

7.1 All burner joints shall be soundly brazed with any suitable brazing alloy having a high melting point (750 to 800°C). The brazed joints shall be sound and smooth and shall be free from cracks and other defects likely to affect the normal functioning of the burners.

7.2 On assembling with the fuel container the burner shall be concentric with it. The assembly of the burner shall be such that the fuel jet plays centrally and vertically to the burner plate or burner top so as to produce a uniform, well spread blue flame. This screw threads at the base of the burner shall be clean and properly formed and shall be of sufficient length so as to provide a leak-proof assembly with the fuel container.

7.3 In the case of silencer burner, the outer cap of the burner may have five rows of holes equally spaced so that the flame burns without a hissing noise. The outer cap and inner cap of a silencer burner may be either separate or of composite type. In case of tube burner with silencer arrangement, provision shall be made for locking the silencer cap to the burner head.

7.4 Sufficient opening shall be provided in the burner assembly to allow free access of the pricker to the fuel orifice and for screwing and unscrewing the nipple.

7.5 The orifice for the fuel in the nipple as well as in the tube type burner shall be drilled straight and shall be free from burrs. The mouth of the orifice shall be so shaped as to facilitate the use of the pricker for cleaning.

7.6 Washer

The washer shall be resistant to heat and kerosene oil and it shall be capable of giving leak-proof seal.

7.7 Interchangeable Parts

The burner as well as its following components shall be interchangeable in the same type of stove:

- a) Nipple
 - b) Burner plate
 - c) Burner head
- } For tube type burner

8 FINISH

The burner and its various components shall be finished smooth and free from burrs, sharp edges and any other manufacturing defects. Residues of solder flux and similar corrosives shall be removed during manufacture to prevent later corrosion.

9 MARKING

9.1 Each burner shall be marked with the designation of the stove along with which it is to be used and the name or recognized trade-mark of the manufacturer. The burner shall also be marked with the rate of fuel consumption in g/h with a tolerance of ± 15 percent, on packages containing the burners with stickers/printing.

9.2 BIS Certification Marking

The burner may also be marked with the Standard Mark, along with which it is to be mentioned 'for burner only'.

9.2.1 The use of the Standard Mark is governed by the provisions of *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

10 PACKING

Each burner together with its components shall be wrapped in a moisture-proof paper and then packed in a thick paper pack. It may also be packed as agreed to between the purchaser and the supplier.

11 SAMPLING

Sampling and acceptance criteria for burners shall be as agreed to between the purchaser and the supplier. A recommended scheme for the same is given in Annex B.

12 TESTS**12.1 Pressure Tests****12.1.1 Maximum Working Pressure Test**

Each burner shall be subjected to an air pressure of 250 kN/m² (2.5 kgf/cm² approx) with the outlet blocked. It shall not show any sign of leakage at the joints.

12.1.2 Safety Pressure Test

The burner shall be subjected to an internal hydraulic pressure of 600 kN/m² (6 kgf/cm² approx) for a period of 10 minutes. The burner shall not show any sign of leakage or any appreciable deformation.

12.1.3 Bursting Pressure Test

When the burner selected in 12.1.2 is further subjected to a hydraulic pressure of 1 000 kN/m² (10

kgf/cm² approx), it shall neither burst nor be unduly distorted. Slight leakage of the hydraulic fluid shall, however, be permissible, provided the pressure is capable of being maintained for duration of not less than 5 minutes.

12.2 Test for Thermal Efficiency

When tested in accordance with the method described in Annex C, thermal efficiency of the burner shall not be less than:

- a) 55 percent for roarer and tube type burner, and
- b) 58 percent for silencer type burner.

12.3 Fuel Consumption

Each burner when fitted to the stove of corresponding designation shall give within ± 15 percent of manufacturer's specified fuel consumption in g/h.

ANNEX A**(Clause 2)****LIST OF REFERRED INDIAN STANDARDS**

<i>IS No.</i>	<i>Title</i>	<i>IS No.</i>	<i>Title</i>
210:1993	Grey iron castings (<i>fourth revision</i>)	1568:1970	Wire cloth for general purposes (<i>first revision</i>)
292:1983	Leaded brass ingots and castings (<i>second revision</i>)	1570 (Part 5): 1985	Schedules for wrought steels: Part 5 Stainless and heat resisting steels (<i>second revision</i>)
319:1989	Free cutting brass bars, rods and sections (<i>fourth revision</i>)	2283:1981	Nickel silver sheet, strip and foil (<i>first revision</i>)
407:1981	Brass tubes for general purposes (<i>third revision</i>)	2787:1986	Oil pressure heaters (<i>second revision</i>)
410:1977	Cold-rolled brass sheet, strip and foil (<i>third revision</i>)	4218 (Part 4): 1976	ISO metric screw threads : Part 4 Tolerancing system (<i>first revision</i>)
513:1986	Cold-rolled low carbon steel sheets and strips (<i>third revision</i>)	4905:1968	Methods for random sampling
1079:1994	Hot-rolled carbon steel sheets and strips (<i>fifth revision</i>)	5493:1981	Dimensions for wrought copper and copper alloy tubes (<i>first revision</i>)
1342:1988	Oil pressure stove (<i>fifth revision</i>)	6912:1985	Copper and copper alloy forging stock and forgings (<i>first revision</i>)
1459:1974	Kerosene (<i>second revision</i>)		

ANNEX B

(Clause 11)

SAMPLING SCHEME AND CRITERIA FOR CONFORMITY
FOR BURNERS**B-1 LOT**

B-1.1 In any consignment, all the burners of the same designation, type, shape, size and manufactured from same materials under essentially similar conditions of production, shall be grouped together to constitute a lot.

B-1.1.1 Each lot shall be inspected separately to ascertain its conformity or otherwise to the requirements of this specification.

B-2 SELECTION OF SAMPLES

B-2.1 The number of burners to be selected for the sample from a lot, shall depend upon the size of the lot and shall be in accordance with col 1 and 2 of Table 1.

B-2.2 The burners to be selected for the sample from a lot shall be chosen at random and in order to ensure the randomness of selection, IS 4905 shall be followed.

Table 1 Sample Size and Criteria for Conformity
(Clause B-2.1, B-3.1, B-3.2, B-3.3 and B-3.4)

No. of Burners in the Lot	No. of Burners to be Selected in the Sample	Permissible Number of Defective Burners	Sub-Sample Size	permissible Number of Defectives in the Sub-Sample
(1)	(2)	(3)	(4)	(5)
Up to 150	20	0	5	0
151 " 300	32	1	8	0
301 " 500	50	2	13	0
501 " 1 000	80	3	20	0
1 001 " 3 000	125	5	32	1
3 001 and above	200	7	50	2

B-3 NUMBER OF TESTS AND CRITERIA FOR CONFORMITY**B-3.1 Inspection for Shape, Size, Dimensions, Construction and Finish**

All the burners selected according to **B-2.1** and col 2 of Table 1 shall first be inspected for shape, size, dimensions, construction and finish. Any burner failing in any one or more of the above characteristics

shall be considered as defective. The lot shall be considered as conforming to the requirements of these characteristics if the number of defective burners obtained in the sample does not exceed the permissible number of defectives given in col 3 of Table 1.

B-3.2 Testing for Maximum Working Pressure

The burners in the sample having passed the requirements of **B-3.1** shall be subjected to maximum working pressure test (see 12.1.1). The lot shall be considered as conforming to the requirements of maximum working pressure test only if the number of burners failing in this test does not exceed the corresponding permissible number of defectives given in col 3 of Table 1.

B-3.3 Testing for Safety Pressure and Bursting Pressure

From the stoves inspected/tested under **B-3.2** and found conforming to the requirements of above-mentioned characteristics, a sub-sample of the size given in col 4 of Table 1 shall be selected at random and subjected to the safety pressure test and subsequently to the bursting pressure test in accordance with 12.1.2 and 12.1.3. A stove failing to satisfy either safety pressure test or bursting pressure test or both shall be considered as defective. The lot shall be declared as conforming to the requirements of safety pressure and bursting pressure if the number of defective stoves as obtained above does not exceed the permissible number of defectives given in col 5 of Table 1.

B-3.4 Testing for Thermal Efficiency

From the burners inspected/tested under **B-3.1** and **B-3.2** and found conforming to the requirements of the above mentioned characteristics, a sub-sample of the size given in col 4 of Table 1 shall be selected at random and subjected to thermal efficiency test (see 12.2). A burner failing to meet the requirements of thermal efficiency test shall be considered as defective. The lot shall be considered as conforming to the requirements of thermal efficiency test, only if the number of defective burners as obtained above does not exceed the permissible number of defective given in col 5 of Table 1.

ANNEX C

(Clause 12.2)

TEST FOR THERMAL EFFICIENCY

C-1 THERMAL EFFICIENCY

Thermal efficiency may be defined as the ratio of heat actually utilized to the heat theoretically produced by complete combustion of a given quality of fuel (which is based on the net calorific value of the fuel).

C-2 CONDITIONS FOR CARRYING OUT THERMAL EFFICIENCY TEST

C-2.1 Test Room Conditions

C-2.1.1 The air of the test room shall be free from draughts likely to affect the performance of the stove. The initial temperature of the room shall be between 25 to 30°C.

C-2.1.2 At the start of the test, the stove and the kerosene in its container shall be at room temperature.

C-2.2 Test Kerosene

The kerosene used shall be as available from the market. However, in the case of dispute the testing shall be done with kerosene conforming to IS 1459.

C-2.3 Setting of the Stove

The burner whose efficiency is to be determined shall be fitted properly into the stove of corresponding designation with 15 to 30 mm clearance, between the bottom of the vessel and top of the burner as declared by the manufacturer. Prior to the performance tests the stove shall be checked and examined to ensure that all components are undamaged and are properly assembled according to the manufacturer's instructions. The stove shall be lighted and allowed to burn for a period of 10 minutes at a working pressure 100 to 200 kN/m² (1 to 2 kgf/cm² approx) during which a blue flame shall be obtained. Now a vessel containing water shall be placed on the stove and the pressure shall be readjusted to get a maximum blue and stable flame.

In the manner prescribed above, the stove shall be operated at the maximum blue flame height for two periods of approximately two hours each during which it shall be observed for any abnormal performance or leakage.

C-3 METHOD OF TEST

C-3.1 Fuel Consumption Test

The burner whose efficiency is to be determined shall be fitted properly into the stove of corresponding designation. The stove shall be fitted with kerosene up to three-fourths of its capacity. The stoves shall be

lighted and brought up to the working pressure as given below:

Stove Designation		Working Pressure
New Designation	Existing Designation	kgf/cm ²
OOR, OOS, OTR,	100, 101, 105, 140	1.4
OTS, 1R, 1S	105, 140, 1, 5, 11 and 5F	
11R, 11S, 2R, 2S	2, 2S, 3, 3S	2.0
3R, 3S		

After burning for 5 min, the lighted stove is weighed on a sensitive balance with an accuracy of one gram. The stove shall be allowed to burn for one hour with an aluminium vessel having sufficient water in it. At the end of one hour, weight of the burning stove shall be noted after removing the aluminium vessel. The difference in the initial and final weight of the burning stove shall give the kerosene consumption rate in g/h. Then suitable vessel for the corresponding fuel consumption rate shall be selected in accordance with Table 2 for determining the thermal efficiency.

C-3.2 A cylindrical flat-bottomed aluminium vessel (selected according to fuel consumption rate as given in Table 2 read with C-3.1) provided with aluminium lid shall be used for this purpose. The lid shall have two holes, one for inserting the cork for holding a thermometer and the other for the stirrer (made of aluminium wire) required for stirring the water. The vessel along with the lid and stirrer shall be weighed first and then filled with the required amount of water (as in Table 2 read with C-3.1). The initial temperature of water shall be kept within $\pm 2^\circ\text{C}$ from the actual room temperature. The fuel container of the stove shall be connected to a pressure gauge and the fuel container filled to nearly three-fourths of its capacity. The stove shall be lighted and an average working pressure for the corresponding stove as given in C-3.1 shall be maintained. After burning the stove for 5 minutes, weight of the stove, time and initial temperature of the water ($\pm 2^\circ\text{C}$ from the actual room temperature) in the vessel shall be noted. The vessel shall be covered with a lid fitted with a test quality mercury thermometer having an accuracy of 0.5°C inserted into the cork in such a way that the bulb of the thermometer dips into half the depth of the water in the vessel. The free end of the stirrer shall come out of the lid.

C-3.3 The vessel shall be placed on the stove after initial weighing of the stove and the stop watch shall be started immediately. Heat the water while stirring

IS 8808 : 1999

with the help of stirrer till it attains a temperature of $90 \pm 1^\circ\text{C}$. Note the time required to heat the water from initial temperature t_1 ($\pm 2^\circ\text{C}$ from the actual room temperature) to the final temperature, t_2 ($90 \pm 1^\circ\text{C}$), the stop watch shall then be stopped. The stove shall be weighed again after one hour of its previous weighing. The difference in the initial and the final weight of the burning stove shall give the kerosene consumption rate in g/h.

NOTE — Care shall be taken to ensure that the same average working pressure is maintained throughout the test and the water stirred gently during heating.

C-4 CALCULATIONS

Thermal efficiency shall be calculated as follows:

- Heat gained by vessel = $W \times 0.214 (t_2 - t_1)$ kcal
- Heat utilized for heating water = $w \times 1 (t_2 - t_1)$ kcal
- Total heat utilized = $(W \times 0.214 + w) (t_2 - t_1)$ kcal

$$\text{d) Heat produced by fuel} = \frac{X \times T \times 10\,500}{60} \text{ kcal}$$

$$\text{e) Thermal efficiency, percent} = \frac{\text{Heat utilized}}{\text{Heat produced}} \times 100$$

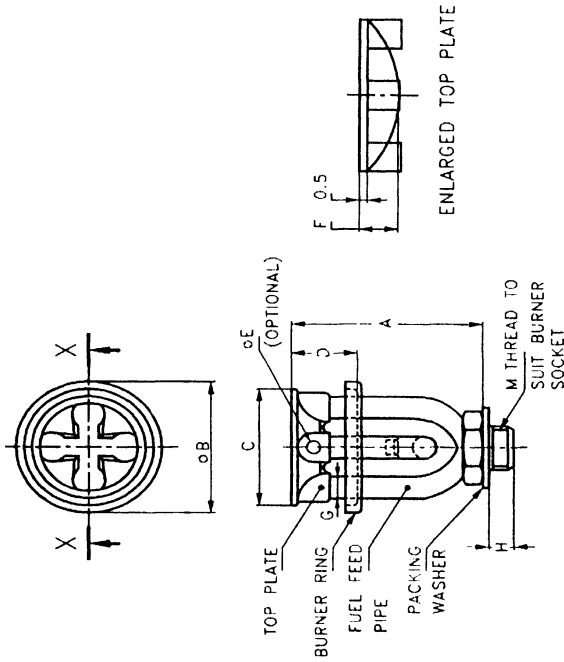
$$= \frac{(W \times 0.214 + w) (t_2 - t_1)}{X \times T \times 10\,500} \times 60 \times 100$$

where

- W = weight in kilogram of the vessel complete with lid and stirrer,
 w = weight in kg of the water,
 t_1 = initial temperature of water in $^\circ\text{C}$,
 t_2 = final temperature of water in $^\circ\text{C}$,
 X = weight in kilogram of fuel consumed in one hour, and
 T = time in minutes taken to heat the water to t_2 $^\circ\text{C}$ (specific heat of aluminium, is 0.214, net calorific value of fuel is 10 500 kcal/kg).

Table 2 Aluminium Vessels for Thermal Efficiency Test
(Clause C-3.1)

Fuel Consumption Rate, g/h at Thermal Efficiency Test Pressure	Vessel Diameter (External) mm ($\pm 5\%$)	Vessel Height (External) mm ($\pm 5\%$)	Total Weight with Lid g ($\pm 10\%$)	Weight of Water in Vessel kg
(1)	(2)	(3)	(4)	(5)
151 - 180	245	130	632	4.8
181 - 200	260	140	750	6.1
201 - 240	285	155	853	7.7
241 - 270	295	165	920	9.4
271 - 300	320	175	1 100	11.4
301 - 330	340	185	1 200	12.50
331 - 360	350	195	1 310	14.00
361 - 390	370	200	1 420	16.00
391 - 420	380	210	1 530	18.00
421 - 450	400	215	1 640	20.00
451 - 480	410	225	1 750	22.00
481 - 510	420	230	1 860	24.00
511 - 540	435	240	2 000	26.50
541 - 570	450	245	2 130	29.00
571 - 600	460	250	2 240	31.00
601 - 630	470	255	2 320	33.00
631 - 660	480	260	2 440	35.00
661 - 700	490	265	2 520	38.00
701 - 750	500	270	2 650	41.00
751 - 800	510	275	2 720	44.00
801 - 850	530	280	3 050	47.00
851 - 900	540	285	3 190	50.00
901 - 950	550	290	3 330	53.00
951 - 1 000	560	300	3 480	57.00



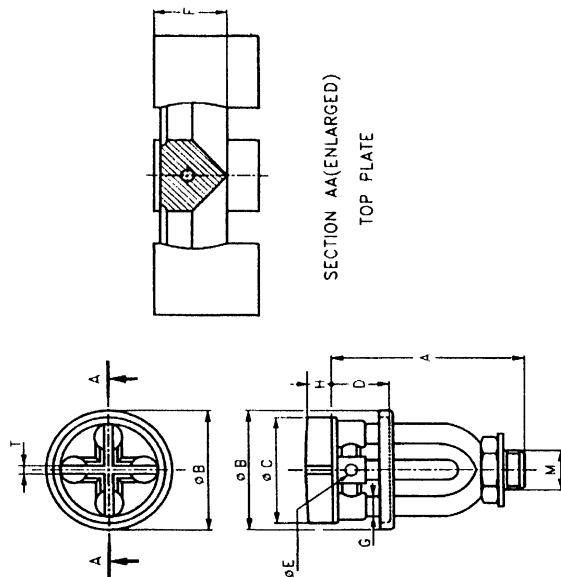
1 A Burner, Roarer Type, Typical

Stove Designation	Burner Designation	Dimensions			Hole Dia E (Optional)	Thread (Medium Fit)	Diameter ¹⁾ of Fuel Feed Pipe G	Thickness of Burner Ring	Thickness of Fuel Feed Pipe	Dimensions of Hexagonal Nut Across Flats	Mass of Burner			
		A	B	C										
		±1	±1	±1		Min	M	Min		±0.5	g. Min			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
0 and 1	1 and 101 0 and 1	60	44	38	21.0 ± 1	4.5	9	M 14.5 x 0.75	8.0 ± 0.08	0.75	0.80 ± 0.10	19.0	19.0	90
2	2	73	55	45	23.0 ± 1	5.5	11	M 14.5 x 0.75	9.0 ± 0.08	0.95	1.00 ± 0.12	19.0	19.0	135
3	3	100	73	58	32.0 ± 1.5	6.0	16	M 17 x 1.00	10.0 ± 0.1	1.00	1.14 ± 0.15	22.0	22.0	270
	4	120	85	68	47.0 ± 2	6.5	19	M 17 x 1.00	11.0 ± 0.1	1.12	1.14 ± 0.15	22.0	22.0	425

See IS 5493 for details.

¹⁾ See IS 5493 for details.

All dimensions in millimetres unless otherwise specified

SECTION AA(ENLARGED)
TOP PLATE

1B Burner, Roarer Type for Oil Pressure Heater

Oil Pressure Heaters	Heater Designation	Dimensions				E Hole Dia (Optional)	F	Thread (Medium Fit)	Diameter ¹⁾ of Fuel Feed Pipe	Thick- ness of Burner Ring	Thick- ness of Fuel Feed Pipe	Dimen- sion of Hex (Across Flats ± 0.5)	Fin Height	Fin Thick- ness Approx	Mass of Burn- ing M/in
		A	B	C	D ₁										
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
As per IS 2787 for 1 and multi-burners	1 H	60	44	38	21 \pm 1	4.5	9	M14.5 \times 0.75	8 \pm 0.08	0.75	0.8 \pm 0.10	19	-	-	90
	2 H	73	55	15	23 \pm 1	5.5	10	M14.5 \times 0.75	9 \pm 0.03	0.95	1.0 \pm 0.12	19	-	-	120
	3 H	100	73	58	44 \pm 1	6.0	16	M17 \times 1.00	10 \pm 0.1	1.00	1.14 \pm 0.15	22	15	2.5	250
	4 H	120	85	68	49 \pm 2	6.5	19	M17 \times 1.00	11 \pm 0.1	1.12	1.14 \pm 0.15	22	18	3.0	400

¹⁾ Refer to IS 5493 for details.²⁾ Fin may be either integral or separately brazed. Therefore dimensions H and T are only approximate.

All dimensions in millimetres unless otherwise specified

FIG. 1 BURNER, ROARER TYPE

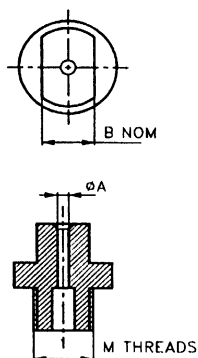
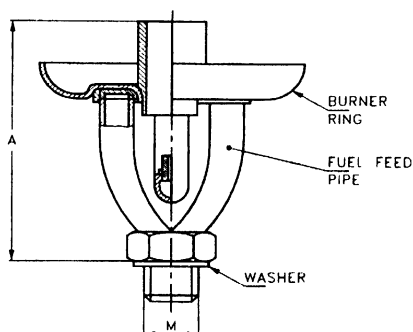


FIG. 2 NIPPLE

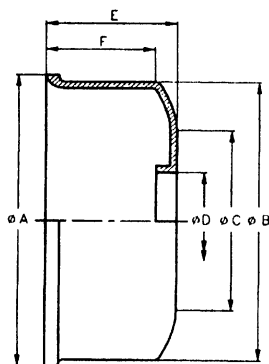
Burner Designation for Stove	Burner Designation of Oil Pressure Heaters	Dia ¹⁾ 'A' mm	B + 0.5 mm	Thread ²⁾
1	—	0.30	3.75	M 4.5 × 0.5
0, 1S, 2S	1H	0.35	3.75	M 4.5 × 0.5
2	2H	0.40	3.75	M 4.5 × 0.5
3S	—	0.40	5.00	M 6 × 0.75
3	3H	0.57	5.00	M 6 × 0.75
4	4 H	0.75	5.00	M 6 × 0.75

¹⁾ Optional, for guidance only.²⁾ Medium class in accordance with IS 4218 (Part 4).

3A Burner Details, Silencer Type

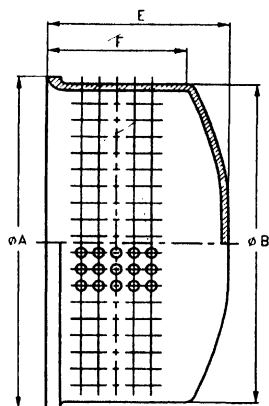
Stove Designation		Burner Designation	Height A mm	Thread (Medium Fit) M	Outside ¹⁾ Dia of Fuel Feed Pipe mm ± 0.1	Thickness of Fuel Feed Pipe mm	Thickness of Burner Ring mm Min	Dimensions Across Flats of Hexagonal Nut, mm ± 0.5
New Designation	Existing Designation							
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
0S, 1S	5 and 10S	0S, 1S	65 ⁺⁰ / _{-2.0}	M14.5 × 0.75	8.0	0.80 ± 0.10	0.95	19.0
2S	2S	2S	78.5 ⁺⁰ / _{-2.0}	M14.5 × 0.75	9.0	1.00 ± 0.12	1.15	19.0
3S	3S	3S	93.0 ⁺⁰ / _{-5.0}	M17 × 1	10.0	1.14 ± 0.15	1.50	22.0

¹⁾ See IS 5493 for details.



3B Inner Cap For Silencer Type Burner

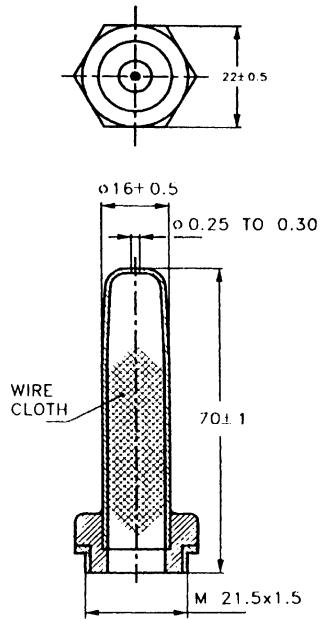
Stove Designation		Burner Designation	Dia A mm ±0.5	Dia B mm ±0.5	Dia C mm ±0.5	Dia D mm +0.5	E mm +0.5	F mm ±0.5
New Designation	Existing Designation							
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
0S, 1S	5 and 10S	0S, 1S	41	40	30	16.5	16.0	14
2S	2S	2S	46	44	32	17.0	19.0	17
3S	3S	3S	59	56	40	19.5	24.5	20



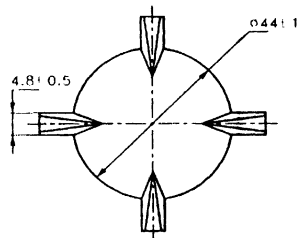
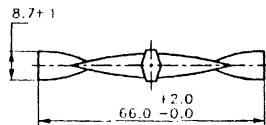
3C Outer Cap For Silencer Type Burner

Stove Designation		Burner Designation	Dia A mm ± 0.5	Dia B mm ± 0.5	E mm ± 0.5	F mm ± 0.5
New Designation	Existing Designation					
(1)	(2)	(3)	(4)	(5)	(6)	(7)
0S, 1S	5 and 10S	0S, 1S	47	44.0	24	20
2S	2S	2S	51	48.5	27	22
3S	3S	3S	63	62.0	37	30

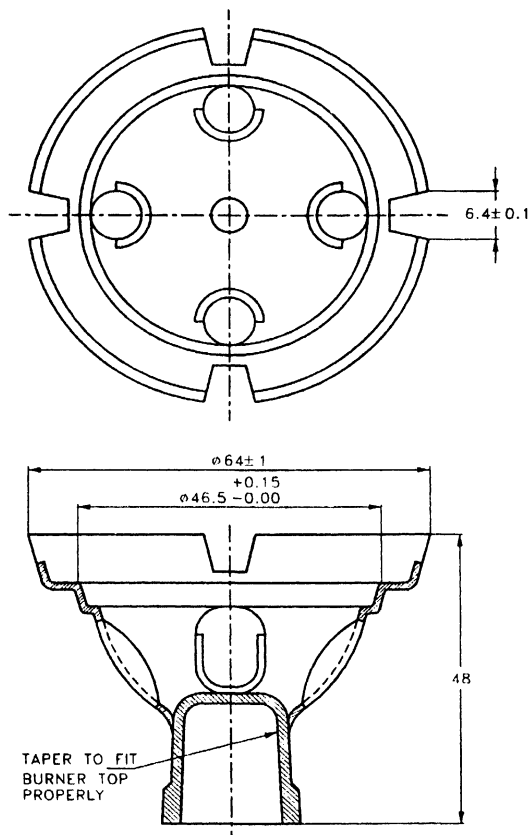
FIG. 3 SILENCER TYPE BURNER



All dimensions in millimetres.
FIG. 4 BURNER FOR STOVE No. 100

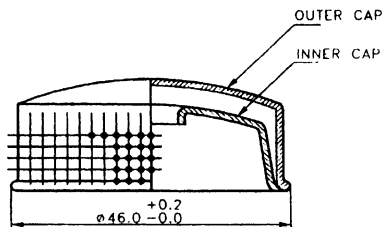


All dimensions in millimetres.
FIG. 5 BURNER PLATE



All dimensions in millimetres.

FIG. 6 BURNER HEAD



All dimensions in millimetres.

FIG. 7 SILENCER FOR TUBE BURNER

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